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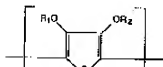
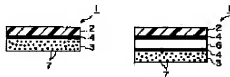
PATENT ABSTRACTS OF JAPAN(11)Publication number : **2000-033673**(43)Date of publication of
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B32B 27/18**B32B 27/36****B65D 77/20****C09K 3/10****C09K 3/16**(21)Application
number : **10-201348**(71) **DAINIPPON PRINTING CO LTD**
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NISHIZAWA MASUMI**(54) LAMINATE****(57)Abstract:**

PROBLEM TO BE SOLVED: To provide a laminate having transparency and excellent antistatic characteristics and made heat-sealable as a lid material to a synthetic resin container.

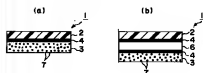
SOLUTION: In a laminate wherein a base material layer 2 comprising a stretched film is provided to one surface of a heat sealant layer 3, the heat sealant layer contains at least one of a polyester resin, a polyurethane resin, an acrylic resin, a vinyl chloride/vinyl acetate copolymer resin and an ethylene/ acrylic acid copolymer resin and polythiophene represented by formula being an antistatic agent 7. The base material layer 2 is a biaxially stretched polyester film with a thickness of 5-100 μ m and the total light transmissivity of the laminate is 80% or more and the haze value thereof is 25% or less.



JAPANESE

[JP,2000-033673,A]

Drawing selection Representative draw



[Translation done.]

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* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. **** shows the word which can not be translated.

3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the layered product which started the layered product and the cover material which used this, especially was provided with static electricity diffusibility and transparency, and the cover material and bag body which are used for the container made of a synthetic resin which stores a semiconductor, IC part articles and these products, the parts for liquid crystal display, a medical related article, food, etc. as contents.

[0002]

[Description of the Prior Art] Before, as a packed body which stored several kinds of solid or liquefied parts, foodstuffs, and an industrial component to the synthetic resin vessel, and sealed the opening with the cover material, it is used for circulation, storage, and sale, or is used in the manufacturing process of said product as the electrical and electric equipment and assembly parts of an electronic item. For example, as shown in drawing 3 (a) and (b), the contents stowage (cavity) 13 is formed in the plastic sheet 12, and electronic-parts 10 grade is stored in this cavity 13.

Then, said cavity is covered with the cover material 11, and there is a packaging form which heat seals the edge part of said cavity 13.

Make into a long picture the plastic sheet 12 which forms said cavity 13 in many cases, and as a packed body, As the letter of rolling up, or tape shape, as mentioned above, in the assembly line of an electronic item, the lid of said packed body is exfoliated, the electronic parts etc. which are stored are taken out using an automatic feeder, and it is used as a function for the part supply of equipping a position. As construction material of said plastic sheet, it is polyvinyl chloride, polypropylene, polystyrene, polyester, polycarbonate, etc., and is the material in which all are charged easily. As said lid, it is the layered product which formed the heat sealant layer in the base film, and heat seals to the edge part of a cavity established in this heat sealant layer and said plastic sheet. Said cavity is covered with the cover material which is the layered product which provided the heat sealant layer, and it seals by heat sealing the edge part. In order to prevent degradation and destruction from arising with the static electricity with which the electronic parts stored were charged in the shaping sheet and the cover material, scouring a spray for preventing static electricity and a conductive particle to the heat sealant layer of a cover material, or applying them to it is performed. It is required for the grade which can inspect the stored electronic parts automatically that a cover material should be transparent.

[0003]

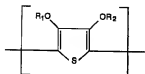
[Problem(s) to be Solved by the Invention] Said plastic sheet, a plastic film, etc. are charged

easily. When using such materials as wrapping, there is a possibility of the electronic parts etc. which are contents being damaged and destroyed by discharge of the static electricity electrified in the plastic sheet, or also influencing the drive of the part feeder in said assembly process. Therefore, the art of decreasing generating and electrification quantity of static electricity in the lid etc. which consist of said plastic sheet, a plastic film, etc. is searched for. As for the method of adding a spray for preventing static electricity to the heat sealant layer of a layered product, in the case of carbon black, a metallic oxide, etc., the transparency as a cover material falls and the spray for preventing static electricity to be used becomes difficult to see through the electronic parts etc. which are stored. To scour the conductive particle of a metallic oxide to a heat sealant layer etc., in order not to check transparency, it is necessary to use a particle with a mean particle diameter of 1 micrometer or less. However, by such particles, there was a problem that the distribution was difficult and also the rise of manufacturing cost could not be avoided. It is required for the grade which can inspect the stored electronic parts automatically that a cover material should be transparent. Sealing nature not only becomes unstable, but the method of applying a surface-active agent has the fault of being unstable, in order that the antistatic effect may be dependent on temperature or humidity. This invention is made in view of such a situation, has transparency and outstanding antistatic characteristics, and offers a technical problem the layered product which can be heat sealed as a cover material to a synthetic resin vessel.

[0004]

[Means for Solving the Problem] In a layered product which provided a base material layer which consists of oriented films in one field of a heat sealant layer in order that this invention might solve such a technical problem, A layered product containing a polythiophene of a structural formula which said heat sealant layer shows below as at least one sort and a spray for preventing static electricity of polyester resin, polyurethane resin, an acrylic resin, polyvinyl chloride acetate copolymer resin, and ethylene acrylic acid copolymer resin, [0005]

[Formula 2]



[0006] Or the layered product which provided the base material layer which consists of oriented films in one field of the heat sealant layer, and provided the static electricity diffusion layer in the field of another side is provided with the following.

Said static electricity diffusion layer Polyester resin, polyurethane resin, an acrylic resin, Polyvinyl chloride acetate copolymer resin, ethylene-vinyl acetate copolymer resin. At least one sort and said chemical formula 1 of ethylene acrylic acid copolymer resin are used with the layered product containing the polythiophene of the structural formula of a statement, and said base material layer It is a biaxially oriented polyester film which is five to 100 micrometer.

The total light transmittance of a layered product is not less than 80%, and a haze value is 25% or less.

[0007]

[Embodiment of the Invention] The layered product of this invention is explained in detail. Drawing 1 is a sectional view showing the example of the layered product of this invention.

Drawing 2 is a sectional view showing another example of the layered product of this invention. Conventionally, the sprays for preventing static electricity added by the heat sealant layer are carbon black, the particles of a metallic oxide, etc., and there was a problem in the transparency as a cover material.

[0008] This invention persons about the antistatic method in the packed body which consists of the packaging bag or molded container which consists of plastic sheets, and a cover material. Wholeheartedly as a result of research. [whether a polythiophene given in said chemical formula 1 is added in the coating liquid which forms the heat sealant layer of the layered product which has a heat sealant layer, and] By providing the static electricity

diffusion layer which contains the aforementioned polythiophene in the inner surface of said heat sealant layer, it finds out that the layered product which has an effect of the prevention from electrification is obtained, and came to complete this invention.

[0009]As shown in drawing 1 (a), as resin which is the method of adding said polythiophene 7 to the heat sealant layer 3, and constitutes said heat sealant layer 3, the first method, Polyester resin, polyurethane resin, an acrylic resin, polyvinyl chloride acetate copolymer resin, ethylene-vinyl acetate copolymer resin, ethylene acrylic acid copolymer resin, etc. can be used. The heat sealant layer 3 applies and forms in the base material layer 2 the coating liquid containing said various kinds of resin which has heat-sealing nature. As coating liquid, it comprises said resin, a spray for preventing static electricity and a dispersing agent and stabilizer, and a diluent, for example. In this invention, a spray-for-preventing-static-electricity ingredient is the solid content 100 of said resin. To a weight section, the active principle of a polythiophene shall be used and it shall add in the range of 0.01 - 100 weight section. Formation of the actual heat sealant layer 3 is performed using coating means, such as gravure coating, a roll coat, and an air knife coat, although chosen in consideration of coating liquid viscosity, mobility, drying property, etc. the physical properties of a base film, etc. Especially as thickness of the heat sealant layer 3, 0.1mm-60 micrometers is the range of 0.5mm-30 micrometers. When the thickness of the heat sealant layer 3 is less than 0.1 mm, heat sealing strength may be weak, and the seal time which heat sealing will take if the thickness of the heat sealant layer 3 exceeds 30 micrometers may become long, and the base material layer 2 may hurt with heating of a seal.

[0010]The second method of formation of the layered product of this invention forms the static electricity diffusion layer 5 containing said polythiophene 7 in the field of the heat sealant layer 3 laminated to the base material layer 2, as shown in drawing 2 (a). Formation of the actual heat sealant layer 3 Polyester resin, polyurethane resin, The solution or emulsion containing resin, such as an acrylic resin, polyvinyl chloride acetate copolymer resin, ethylene-vinyl acetate copolymer resin, and ethylene acrylic acid copolymer resin, is provided in a base material layer at a thickness of 0.5-30 micrometers, or it provides in a thickness of 10-30 micrometers with an extruder. Next, coating of the coating liquid containing a spray for preventing static electricity is carried out to the field of the heat sealant layer 3 established in said base material layer 2. In consideration of coating liquid viscosity, mobility, drying property, etc. the physical properties of a base film, etc., the static electricity diffusion layer 5 is formed by coating means, such as gravure coating, a roll coat, and an air knife coat, like the method mentioned above as a coating method. The resin which forms the static electricity diffusion layer 5 in this case, In order to raise adhesion with the others and the heat sealant layer which are a polyester emulsion, a chlorination PP emulsion, etc., It can be considered as the coating liquid which combined a kind of a polyvinylidene chloride emulsion, a polymethacrylate emulsion, a urethane emulsion, vinyl acetate, poval, and the silane coupling agents, or two sorts or more with said polythiophene. The spray-for-preventing-static-electricity ingredient added in the coating liquid for formation of the static electricity diffusion layer 5 is the solid content of said resin. To 100 weight sections, the active principle of a polythiophene shall be used and it shall add in the range of 0.01 - 100 weight section. As for the thickness of the static electricity diffusion layer 5 formed of coating, it is preferred that it is 0.01-30 micrometers.

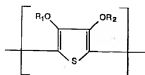
[0011]Although the transparent oriented film which produced resin, such as polyester film, a polypropylene film, and nylon, as a raw material can be used as the base material layer 2 which consists of an oriented film laminated to the layered product 1 of this invention, The biaxially oriented polyester film of the thickness of five to 100 micrometer is especially preferred. The thickness of a base material layer. If it interferes with the dimensional stability at the time of printing to a substrate that it is less than 5 micrometers and the thickness of a base material layer exceeds 100 mm, heat-sealing time will be taken for a long time, and practicality will be lost by the rise of cost. Corona discharge treatment can be performed to the heat sealant layer of said base material layer 2, and the field to laminate, or a primer layer can be provided in them. Static electricity occurrence prevention processing may be performed to the field of another side.

[0012]It found out variously that the result that the polythiophene of the following structural formula of a statement excelled in antistatic property or the transparency as a layered product was shown in said chemical formula 1 as a result of examination about the spray for preventing static electricity added to the coating liquid which adds to the heat sealant of the layered product of this invention, or forms a static electricity diffusion layer. namely[0013]In this invention, the polythiophene mixed to the heat seal layer or static

electricity diffusion layer of a layered product polymerizes the poly dialkoxy thiophene shown with the chemical formula 1 under existence of negative ion.

[0014]

[Formula 3]



[0015]. [whether R_1 and R_2 express hydrogen or the alkyl group of C_{1-4} independently among a formula, and] Or it is a dispersing element of the polythiophene showing the ethylene, propylene group, or 1,2-cyclohexylene group which may be replaced by the alkyl or the phenyl group of the alkylene group of C_{1-4} which can be replaced simultaneously, the methylene group which can be preferably replaced by at any time, and C_{1-12} . For the example of representation of the alkylene group of C_{1-4} which R_1 and R_2 can form

simultaneously or is formed, and alpha olefin, for example, ethene, 1 and 2-alkadiene derived from a propene, 1-hexene, 1-octene, 1-decene, 1-dodecen, and a 1,2-dibromoalkane, In addition, 1,2-cyclohexadiene, 1,3-butadiene, and 2,3-dimethyl-2,3 - There are butylene, 2,3-BENTA diene, etc. Desirable R_1 and R_2 are methylene, ethylene,

and alpha propylene, and their ethylene is especially preferred.

[0016]Poly negative ion is polymers carboxylic acid, for example, polyacrylic acid, polymethacrylic acid or polymer lactic acid and polymers sulfonic acid, for example, polystyrene sulfonate, or polyvinyl sulfonic acid. These polymers carboxylic acid or polymers sulfonic acid can be used as a copolymer with vinylcarboxylic acid or vinylsulfonic acid and other monomers that can polymerize, for example, acrylate, methacrylate, or styrene. a molecular weight of acid of polymers which provide negative ion -- the range of 1,000-2,000,000 -- it is 2,000-500,000 preferably. And it is marketed as acid of polymers, or its alkali salt. A mixture of alkali salt of carboxylic acid of isolation and/or corresponding acid can also be used for poly negative ion made to exist when polymerizing a poly dialkoxy thiophene used for this invention.

[0017]In a layered product of this invention, as shown in [drawing 1 \(b\)](#) or [drawing 2 \(b\)](#), the interlayer 6 may be formed between the base material layer 2 and the heat sealant layer 3. This interlayer 6 can provide for stabilization (buffer nature etc.) of heat sealing in a case of using as a lid, when giving barrier property required for a layered product. As the interlayer 6, polyester, polyolefine, a styrene butadiene block copolymer, etc. can specifically be used. As a method of forming the aforementioned resin, a dry lamination process or an extrusion lamination process can be used. As the interlayer's 6 layer thickness, 5 μm - 100 μm are preferred.

[0018]Although various kinds of above-mentioned resin and sprays for preventing static electricity are contained in the heat sealant layer 3 or the static-free layer 5 of the layered product 1 of this invention, inorganic system particles or organic system particles may be added further. In said contact surface, the heat sealant layer 3 might generate what is called blocking high that carries out tentative installation or adhesion, when a slide was generally had placed by a field and a contact pressurization state of others [heat sealant layer / 3 / this]. In a heat sealant layer in this invention, said particle can be added for prevention from blocking. When said particle adds superfluously, the transparency of the layered product 1 may be spoiled. 0.01 micrometer - 100 micrometers, it is preferably referred to as 0.01 micrometer - 20 micrometers, and particle diameter of particles variously added in this invention as a result of examination is resin for heat sealant layers. It is 1-200 to 100 weight sections. Making it contain in the range of a weight section found out a desirable thing.

[0019]In the heat sealant layer 3 or the static electricity diffusion layer 5 of a layered product of this invention. As inorganic system particles, SiO_2 , aluminum $_2\text{O}_3$, TiO_2 , Fe_2O_3 , ZnO , SnO_2 , CeO_2 , NiO , PbO , S_2Cl_2 , SnCl_2 , ZnCl_2 , FeCl_2 , CaCO_3 , MgCO_3 , B_2O_3 , a calcium silicate, aluminum silicate, a magnesium silicate, a calcium silicate, silicic acid

barium, a lead silicate, silicic acid strontium, aluminium hydroxide, etc. can be used. SiO_2 is especially preferred. As organic system particles, organic system particles etc. which consist of acrylic, a polyolefin system, a polystyrene system, and a polyester system can be used.

[0020] A layered product of this invention is a point of transparency, and the total light transmittance makes not less than 80% and a haze value 25% or less. When used as a cover material of mold goods which store electronic parts etc., it is required for a grade which can inspect said stored electronic parts automatically that a cover material should be transparent. There is a possibility that contents cannot be correctly inspected in the case of said automatic check as said total light transmittance is less than 80% or a haze value is a value exceeding 25%.

[0021]
[Example] An example explains the effect of static electricity diffusion of the layered product of this invention.

[Example 1]
Coating of the coating liquid for static electricity diffusion layer formation was carried out to <formation of static electricity diffusion layer> polyester film. The monograph affair of coating is as follows.

- Polyester film E5100 The rate of the coating liquid spray for preventing static electricity for 50micrometer (trade name by Toyobo Co., Ltd.) one side corona treatment and coating liquid static electricity diffusion layer formation was changed, and it was considered as the presentation of the following six conditions.

[0022]

[Table 1]

表 1 塗工液の組成 重量部

	①	②	③	④	⑤	⑥
樹脂 ※1)	16.7	16.7	16.7	16.7	16.7	16.7
帯電防止剤 ※2)	77.0	57.7	88.5	19.2	9.6	4.8
希釈液 ※3)	6.3	25.6	44.8	64.1	73.7	78.5

[0023]*1) Resin for binders A polyester emulsion, fine textile ES-850 (trade name by Dainippon Ink & Chemicals, Inc.)

Solid content 30 %*2 spray for preventing static electricity Solution Baytron P (trade name by BAYER) which makes a polythiophene an active principle

Active principle 1.3 %*3 diluent Water/IP=75/25 {cable address IP : isopropyl alcohol}

The rate of the active principle in said resin for binders, i.e., the rate of the spray for preventing static electricity as a dry paint film as a static electricity diffusion layer, becomes as in Table 2.

[0024]

[Table 2]

表 2 乾燥塗膜中の有効成分比率

塗工液No	①	②	③	④	⑤	⑥
バインダー用 樹脂/帯電剤	100/20	100/15	100/10	100/5	100/2.5	100/1.25

[0025]<Evaluation of a static electricity diffusion layer> (evaluation criteria)

- It is total-light-transmittance each sample [JIS K7105 Optical characteristic test method

(1) general optical characteristic 5.5 light transmission and all the ray reflectivity] of a plastic It applied correspondingly and measured.

- HAZE value each sample [JIS K7105 The optical test-method (2) special optical characteristic 6.4 of a plastic It measured according to Hays (haze value)].
- The surface resistivity of the surface resistivity static electricity diffusion layer forming face was measured. It is said surface of the sample neglected on 22 ** and the conditions of 40% of relative humidity for 24 hours Resistivity meter MCP-HT260 Mitsubishi Chemical, Inc. make It measured using the trade name. The evaluation result was shown in Table 3.

[0026]

[Table 3]

表 3 静電気拡散層塗工フィルムの評価

	①	②	③	④	⑤	⑥
全光線透過率 (%)	87	88	89	89	90	90
ヘイズ値 (%)	8	6	6	6	5	6
表面抵抗率 (Ω/□)	10 ⁴	10 ⁴	10 ³	10 ³	10 ³	10 ³

[0027]The layered product in which the static electricity diffusion layer was formed was excellent in transparency, as the active principle ratio of a spray for preventing static electricity [as opposed to resin as antistatic property] = 100/2.5 -- the above takes effect -- desirable -- said ratio -- 100/5.0 -- it is above.

[Example 2]

[0028]

[Table 4]

表 4 塗工液の組成

	⑦	⑧
樹脂 ※4)	16.7	11.1
帯電防止剤 ※5)	77.0	77.0
希釈液 ※6)	6.3	11.9

[0029]**4) The resin ** polyester emulsion for binders, and fine textile ES-850 (trade name by Dainippon Ink & Chemicals, Inc.) Solid content 30 %** acrylic emulsion, Neocryl A-655 Solid content (trade name by Zeneca Co.) Solution Baytron P (shrine trade name) which makes an active principle a 45%**5 spray-for-preventing-static-electricity polythiophene

Active principle 1.3 %*6 diluent As water/IP=75 / resin for 25 coating-liquid ** binders, it is a polyester emulsion. Fine textile ES-850 (trade name by Dainippon Ink & Chemicals, Inc.)

solid content (%) addition (weight section)

As resin for coating liquid ** binders, it is acrylic emulsion Neocryl A-655 (Zeneca Co.).

<Evaluation of a static electricity diffusion layer> (evaluation criteria)

- It is total-light-transmittance each sample [JIS K7105 Optical characteristic test method

(1) general optical characteristic 5. 5 light transmission and all the ray reflectivity] of a plastic It applied correspondingly and measured.

- HAZE value each sample [JIS K7105 The optical test-method (2) special optical characteristic 6.4 of a plastic It measured according to Hays (haze value)].

- The surface resistivity of the surface resistivity static electricity diffusion layer forming face was measured. It is said surface of the sample neglected on 22 ** and the conditions of 40% of relative humidity for 24 hours Resistivity meter MCP-HT260 Mitsubishi Chemical, Inc. make It measured using the trade name.

(Evaluation result)

- the polystyrene sheet of heat-sealing-strength thickness 300 μm , and static electricity diffusion layer side of said example ** and ** heat sealing 150 ** on the conditions for 3 kg/cm^2 0.5 second -- 15-mm width -- it exfoliated and was considered as heat sealing strength with the resistance. Each evaluation result was shown in Table 5.

[0030]

[Table 5]

表 5 評価結果

	⑦	⑧
表面抵抗率 (Ω/\square)	10^8	10^8
全光線透過率 (%)	88	87
H A Z E 値 (%)	7	15
ヒートシール強度 ($\text{gf}/15\text{mm}$)	430	440

[0031]** and ** in Example 2 showed very good surface resistivity, and the antistatic effect was accepted. It became that which is convenient practically in light transmission and Hayes. Heat sealing strength is against a polystyrene sheet.
It is intensity with easy peel nature.

[0032]

[Effect of the Invention]The layered product excellent in antistatic property can be obtained, and it came to be able to do by using this layered product by this invention by stabilizing the package of electronic parts, powdered contents, etc. with fear of a discharge breakdown. In [since it excels also in transparency, as a packed body of electronic parts, store said part in the cavity of a SEIKEI sheet, consider it as the packed body which sealed the layered product of this invention as a lid, and] the assembly line of an electronic item, The lid of said packed body was exfoliated, said part which are stored was taken out using the automatic feeder, and it became it is convenient and feasible also in the inspection by the type of packing in the process of equipping a position.

[Translation done.]

